

# Agriculture *for* Development



**conserve?**

**Bunting Memorial Lecture—  
World Development Report 2008  
conservation agriculture—  
India and workshop at FAO**



**No. 3 Autumn 2008**





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The TAA is a professional association of individuals and corporate bodies concerned with the role of agriculture for development throughout the world. TAA brings together individuals and organisations from both developed and less-developed countries to enable them to contribute to international policies and actions aimed at reducing poverty and improving livelihoods. Its mission is to encourage the efficient and sustainable use of local resources and technologies, to arrest and reverse the degradation of the natural resources base on which agriculture depends and, by raising the productivity of both agriculture and related enterprises, to increase family incomes and commercial investment in the rural sector. Particular emphasis is given to rural areas in the tropics and subtropics and to countries with less-developed economies in temperate areas. TAA recognizes the interrelated roles of farmers and other stakeholders living in rural areas, scientists (agriculturists, economists, sociologists, etc.), government and the private sector in achieving a convergent approach to rural development. This includes recognition of the importance of the role of women, the effect of AIDS and other social and cultural issues on the rural economy and livelihoods.

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# Agriculture at a crossroads: a summary of the IAASTD findings

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## International assessment urges radical change to secure future food, equity and planetary health

*“Business as usual is not an option... continuing to focus on production alone will undermine our agricultural capital and leave us with an increasingly degraded and divided planet.”*

Prof. Bob Watson, Director IAASTD and DEFRA Chief Scientist, March 2008

The first ever international assessment of agricultural knowledge, science and technology for development (IAASTD) was co-sponsored by FAO, GEF, UNDP, UNEP, UNESCO, WHO and the World Bank and approved by 57 governments in April 2008.

### Reversing Environmental Damage

**“When Agricultural Knowledge, Science and Technology is developed and used creatively with active participation among various stakeholders across multiple scales, the misuse of natural capital can be reversed... A powerful tool for meeting development and sustainability goals resides in empowering farmers to innovatively manage soils, water, biological resources, pests, disease vectors, genetic diversity, and conserve natural resources in a culturally appropriate manner.”**

**IAASTD, 2008a**

The UK added its approval in June. The Secretary of State for International Development, Douglas Alexander, while announcing the UK's approval to parliament, also said that *“IAASTD has produced a series of options for governments and other stakeholders to consider to help ensure that agricultural knowledge, science and technology fulfils its potential to the reduction of hunger and poverty. The Government will be considering these options in their support of agricultural knowledge, science and research for developing countries.”*

This somewhat bland statement, issued at the height of the food crisis, perhaps masks the seriousness of the analysis presented in the assessment. IAASTD concludes that unless agriculture, and the way society engages with food, agriculture, livestock production and fisheries, is fundamentally changed, it will not be possible to feed the projected 9 billion world population, ensure equity and sustain the planet.

The levels of existing and projected degradation and availability of healthy soils and usable water, to mention but two productive resources under threat, is alarming. The UK and other governments will need to make root and branch reforms of agricultural development and related policies if needed changes identified by this scientific assessment are to be realised.

As IAASTD points out, in many parts of the world natural resources have been exploited as though unlimited and completely resilient to human activities. This unsustainable use



has been exacerbated by both conflicting agricultural demands on the environment and exploitative commercial enterprises. *“The consequences include: land degradation (about 2,000 million ha of land worldwide) affecting 38% of the world’s cropland; reduced water and nutrient availability (quality and access). Agriculture already consumes 70% of all global freshwater extracted worldwide and has depleted soil nutrients, resulting in N, P and K deficiencies covering 59%, 85%, and 90% of harvested area respectively in the year 2000 coupled with a 1,136 million Mg yr<sup>-1</sup> loss of total global production. Additionally, salinization affects about 10% of the world’s irrigated land, while the loss of biodiversity and its associated agro-ecological functions (estimated to provide economic benefits of US\$ 1,542 billion per year) adversely affect productivity especially in environmentally sensitive lands in sub-Saharan Africa and Latin America. Increasing pollution also contributes to water quality problems affecting rivers and streams: about 70% in the USA. There have also been negative impacts of pesticide and fertilizer use on soil, air and water resources throughout the world.”* (IAASTD, 2008b)

Recognising these threats and analysing future options to sustain production, IAASTD confirms that biologically diverse, agro-ecological farming and grazing methods, especially those practised sustainably by small-scale food producers, particularly women, makes agriculture more resilient, adaptive and capable of eliminating hunger and rural poverty in the long term.

IAASTD emphasises the importance of agricultural knowledge, science and technology to the multifunctionality of agriculture and its intersection with other local to global concerns. These include the loss of agricultural biodiversity and agro-ecosystem functions, increasing resilience to climate change and the concentration of ownership of land and water resources and the food chain.

IAASTD has found that an increase and strengthening of agricultural knowledge, science and technology towards agro-ecological sciences will contribute to addressing environmental issues while maintaining and increasing productivity. On GM crops, IAASTD found that yield impacts are highly variable, often with increased use of agro-chemicals and reduced yields per unit area. It does not rule out further work on biotechnologies but it recognises that genetic modification, using proprietary genes and technologies, in particular, has done nothing so far to avert hunger and poverty and it is speculative to assert it will in the future.

IAASTD also confirms policy and institutional failure has limited the use of sustainable practices and has allowed concentration of power in the food system and speculation in food commodities. It could be argued that this is the fundamental underlying reason why people are malnourished, farmers are poor and the price of food is rising. In particular, unfair trade agreements are identified as causes of current economic problems, especially for small-scale farmers.

### **Options for sustainable productivity**

**“...include improving nutrient, energy, water and land use efficiency; improving the understanding of soil-plant-water dynamics; increasing farm diversification; supporting agro-ecological systems, and enhancing biodiversity conservation and use at both field and landscape scales; promoting the sustainable management of livestock, forest and fisheries; improving understanding of the agro-ecological functioning of mosaics of crop production areas and natural habitats; countering the effects of agriculture on climate change and mitigating the negative impacts of climate change on agriculture.”**

**IAASTD, 2008b**

## Multifunctionality

**“The term multifunctionality is used [in IAASTD] solely to express the inescapable interconnectedness of agriculture’s different roles and functions. The concept of multifunctionality recognizes agriculture as a multi-output activity producing not only commodities (food, feed, fibres, agrofuels, medicinal products and ornamentals), but also non-commodity outputs such as environmental services, landscape amenities and cultural heritages.”**

**IAASTD, 2008a**

**“An increase and strengthening of agricultural knowledge, science and technology [AKST] towards agro-ecological sciences will contribute to addressing environmental issues while maintaining and increasing productivity. Formal, traditional and community-based AKST need to respond to increasing pressures on natural resources, such as reduced availability and worsening quality of water, degraded soils and landscapes, loss of biodiversity and agro-ecosystem function, degradation and loss of forest cover and degraded marine and inshore fisheries.”**

**Key Finding #7, IAASTD, 2008**

## Diverse Voices

**Achieving sustainability and development goals will involve creating space for diverse voices and perspectives and a multiplicity of scientifically well-founded options, through, for example, the inclusion of social scientists in policy and practice of Agricultural Knowledge, Science and Technology.**

**Key Finding #22, IAASTD, 2008a**

### Do not disconnect!

One aspect highlighted by the findings of IAASTD is the current status of agriculture. This can be characterized by a number of disconnects both in the developed and developing world. They need to be addressed urgently: reconnections must be made.

- ▶ Disconnects between agriculture and the environment (affecting water availability, energy use, biodiversity loss, soil erosion, productivity and sustainability of production, ecosystem services and multifunctionality).
- ▶ Disconnects between consumers and food providers (affecting availability of local food markets, fluctuating food prices and remuneration to producers, costly externalities e.g., health and pollution, loss of trust in food quality, food safety and environmental security).
- ▶ Disconnects between land, water resources and cities (affecting the need for stronger planning regulations to stem uncontrolled urban sprawl on productive land).
- ▶ Disconnects between policies and expectations (affecting investments in research and education in a food system that sustains people and the planet, pro-poor investments including infrastructure that support poor people, trade agreements and incentives that should be fair and positive).

These conclusions are, of course, not new. Any smallholder farmer organisation will say that these have been their messages for decades; but their voices have been marginalised. What is new is that following four years of rigorous evidence gathering and analysis by scientists, IAASTD has confirmed the views of small-scale food providers and their organisations.

## What was the IAASTD process?

400 natural and social scientists, biologists and economists, biotechnologists and anthropologists from all regions of the world worked on IAASTD. Their report was peer reviewed twice. Furthermore, IAASTD was overseen by a 60 member Bureau made up of 30 governments, and the same number of public research bodies, the private sector and NGOs (including Practical Action).

The Bureau set the rules for the methodology, analysis and how to deal with any conflicts of interpretation of the evidence – which proved an important safeguard in the process of adopting the report – ensuring the authors’ views prevailed.

The final result is a report of over 2,000 pages which builds up to summaries, intensely negotiated line by line, of 22 Key Findings covering all aspects of food and agriculture policy, rural development and scientific research; and a Synthesis Report focusing on eight key themes ranging from bioenergy, trade and markets to traditional and local knowledge and community-based innovation, especially by women.

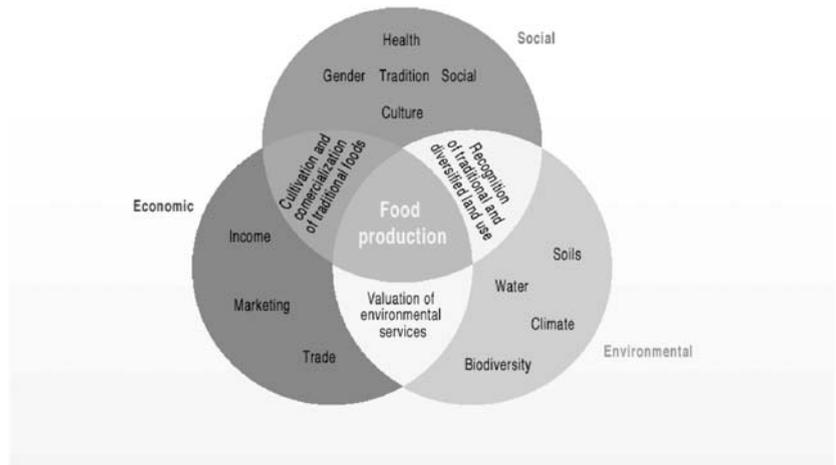
While 58 governments approved the report, a few disagreed with specific wording in particular paragraphs and recorded their reservations. Australia, Canada and USA did not adopt all the conclusions or the summary reports, variously citing concerns about IAASTD’s findings on trade, transgenics and the imperative for fundamental change.

### Key Issues summarised in IAASTD Synthesis Report

- **Bioenergy**
- **Biotechnology**
- **Climate change**
- **Human health**
- **Natural resource management**
- **Trade and markets**
- **Traditional and local knowledge and community-based innovation**
- **Women in agriculture**

**IAASTD, 2008b**

The inescapable interconnectedness of agriculture’s different roles and functions



*"Agriculture operates within complex systems and is multifunctional in its nature. A multifunctional approach to implementing AKST will enhance its impact on hunger and poverty, improving human nutrition and livelihoods in an equitable, environmentally, socially and economically sustainable manner."*  
Key Finding #6, IAASTD, 2008a.

## What next?

IAASTD provides the evidence that donors, UN organisations, intergovernmental processes, research institutions, NGOs and others can use to back up views about why it is essential to transform agriculture, policy and institutions in order to realise vital social and sustainability goals concerning hunger, poverty, equity and the environment. It will

also help them with arguments about how to do this through increasing support for smallholder farmers producing affordable food, in ways that are environmentally sustainable, while protecting small-scale food providers from the corporate-controlled, industrial food system. Organisations, institutions and governments should ensure IAASTD's findings are turned into binding agreements for change, citing the reports and research that underpin the assessment.

In terms of the UK's development and related policies (trade, enterprise, environment, etc.), it will require a serious look at DFID's agricultural research strategy as this moves into its implementation phase. This re-examination should now give greater emphasis to locally controlled agro-ecological knowledge, sciences and technologies developed for diverse and resilient food production – and a concomitant reduction in supporting the introduction of proprietary genetic modification and allied technologies. It should also result in the UK refocusing effort on, and supporting the protection of, small-scale agriculture that can be more productive per unit area than low-labour industrial production technologies.

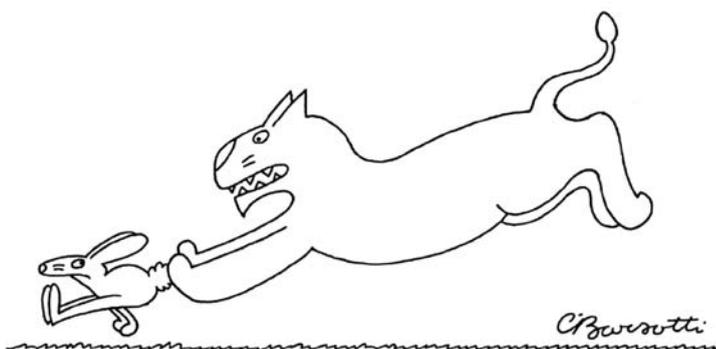
Civil Society Organisations, including the international small-scale farmers' movement La Via Campesina met in Rome in parallel to the FAO food crisis summit in June. They supported the findings of IAASTD, something that was notably muted in the official summit in which world leaders were mostly calling for

more of the same policies and technical solutions (e.g., more fertilisers and genetically uniform seeds) that lie at the root of the social and ecological crisis.

CSOs recognise IAASTD as a way forward to overcoming what is in fact a long-term emergency requiring long-term solutions of which knowledge, science and technology are only a part. They are promoting alternatives that will feed people now and in the future and will never compromise the Right to Food. These alternatives will strengthen local markets and biodiverse local food production that is more resilient to climate and price shocks.

Beyond knowledge, science and technology per se, CSOs are urging governments to make related institutional changes. Among other things, these are to re-establish publicly controlled strategic grain reserves and supply management policies that will beat speculation; to stop industrial biofuel production, which uses land that should be feeding people; and to implement comprehensive agrarian reforms that will ensure small-scale food providers can control the land and other resources they need to ensure sustainable food production for local communities. In short, Civil Society is calling for locally controlled food sovereignty that would avert future food crises and ensure a healthy and productive planet (IPC, 2008).

IAASTD supports these approaches. Its wise findings are derived from a comprehensive scientific examination of the evidence concerning the long-term state of food and agriculture and the knowledge, science and technology needed. IAASTD was approved in the thick of the food crisis and it would be a foolish (or distracted) decision maker, development worker or scientist who would now prioritise production at any cost, ignoring the findings IAASTD, and fail to implement the long-term, radical, technical and institutional actions required to secure future food supplies and conserve the biosphere.



*"What are you complaining about? It's a level playing field."*

*"Opening national agricultural markets to international competition can offer economic benefits, but can lead to long term negative effects on poverty alleviation, food security and the environment without basic national institutions and infrastructure being in place."*



## 22 KEY FINDINGS OF IAASTD – at a glance:

**1. PRODUCTION INCREASES:** Agricultural Knowledge, Science and Technology (AKST) have contributed to substantial increases in agricultural production over time, contributing to food security.

**2. UNEVEN BENEFITS:** People have benefited unevenly from these yield increases.

**3. NEGATIVE CONSEQUENCES:** Emphasis on increasing yields and productivity has in some cases had negative consequences on environmental sustainability.

**4. ENVIRONMENTAL DEGRADATION:** The environmental shortcomings of agricultural practice [is] increasing deforestation and overall degradation.

**5. INCREASED DEMAND EXPECTED:** Global cereal demand is projected to increase by 75% between 2000 and 2050 and global meat demand is expected to double.

**6. MULTIFUNCTIONALITY OF AGRICULTURE:** Agriculture operates within complex systems and is multifunctional in its nature.

**7. STRENGTHEN AGROECOLOGICAL SCIENCES:** An increase and strengthening of AKST towards agroecological sciences will contribute to addressing environmental issues while maintaining and increasing productivity.

**8. REDIRECT AKST:** Strengthening and redirecting the generation and delivery of AKST will contribute to addressing a range of persistent socioeconomic inequities.

**9. INVOLVE WOMEN:** Greater and more effective involvement of women and use of their knowledge, skills and experience will advance progress towards sustainability and development goals and a strengthening and redirection of AKST to address gender issues will help achieve this.

**10. BUILD ON EXISTING KNOWLEDGE:** [using] more innovative and integrated applications of existing knowledge, science and technology (formal, traditional and community-based).

**11. USE NEW AKST APPROPRIATELY:** Some challenges will be resolved primarily by development and appropriate application of new and emerging AKST.

**12. RESEARCH FOCUS ON SMALL-SCALE:** Targeting small-scale agricultural systems helps realize existing opportunities.

**13. CREATE OPPORTUNITIES FOR POOR FARMERS:** Significant pro-poor progress requires creating opportunities for innovation and entrepreneurship, which explicitly target resource poor farmers and rural labourers.

**14. DIFFICULT POLICY CHOICES:** Decisions around small-scale farm sustainability pose difficult policy choices.

**15. PUBLIC POLICY AND REGULATION CRITICAL:** Public policy, regulatory frameworks and international agreements are critical to implementing more sustainable agricultural practices.

**16. NEW INSTITUTIONAL ARRANGEMENTS REQUIRED:** Innovative institutional arrangements are essential to the successful design and adoption of ecologically and socially sustainable agricultural systems.

**17. NEGATIVE IMPACT OF INTERNATIONAL TRADE:** Opening national agricultural markets to international competition can lead to long-term negative effects on poverty alleviation, food security and the environment.

**18. EXPORT AGRICULTURE UNSUSTAINABLE:** Intensive export oriented agriculture [often] has adverse consequences such as exportation of soil nutrients and water, unsustainable soil or water management, or exploitative labour conditions.

**19. CRUCIAL CHOICES:** The choice of relevant approaches to adoption and implementation of agricultural innovation is crucial for achieving development and sustainability goals.

**20. MORE INVESTMENT IN MULTI-FUNCTIONALITY:** More and better-targeted AKST investments, explicitly taking into account the multifunctionality of agriculture.

**21. CODES OF CONDUCT NEEDED:** Codes of conduct by universities and research institutes can help avoid conflicts of interest and maintain focus when private funding complements public sector funds.

**22. MULTIDISCIPLINARY APPROACHES REQUIRED:** Using diverse voices and perspectives and a multiplicity of scientifically well-founded options, through, for example, the inclusion of social scientists in policy and practice of AKST.

For more details about the assessment, its reports and its findings, see:

[www.agassessment.org](http://www.agassessment.org),  
[www.agassessment-watch.org](http://www.agassessment-watch.org),  
[www.panna.org/jt/agAssessment](http://www.panna.org/jt/agAssessment),

*“Agricultural Knowledge, Science and Technology for Development”*. Summary of IAASTD Synthesis Report. Alan Spedding. Arthur Rank Centre. Briefing 622. Available at: [www.arthurrankcentre.org.uk/projects/rusource\\_briefings/rus08/622.pdf](http://www.arthurrankcentre.org.uk/projects/rusource_briefings/rus08/622.pdf)

*“Agriculture at a Crossroads”* - the Reports of IAASTD will be available in print from Island Press by the end of the year. See: [www.islandpress.org/bookstore/details.php?prod\\_id=1833](http://www.islandpress.org/bookstore/details.php?prod_id=1833)

IAASTD (2008a) Global Summary for Decision Makers. Available at: [www.agassessment.org](http://www.agassessment.org)

IAASTD (2008b) Synthesis Report. Available at: [www.agassessment.org](http://www.agassessment.org)

IPC (2008) Declaration of the Terra Preta Forum, Rome, June 2008. Available at [www.foodsovereignty.org/public/terrapreta/final.doc](http://www.foodsovereignty.org/public/terrapreta/final.doc)

A shorter version of this article *“Food at any price is not sustainable”* appeared in the Food Ethics Council magazine. See: <http://www.foodethicscouncil.org/node/364>